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## Special Attractions in City Parks.

A VALUED correspondent writes to say that in his opinion the view we take of the functions and uses of city parks is too narrow to meet all the wants of the city population. He agrees with us that broad pastoral scenery is especially restful to people whose every-day life is passed within rigid and rectangular city conditions, but after all, people want something more attractive than the beauty of natural scenery to allure them where they can have the benefit of sunlight and fresh air. He thinks, for example, that the menagerie in Central Park is the most useful feature of the park, because the grounds are constantly crowded with children, who would never see the park but for this attraction. He adds that if there is any considerable portion of the population who would be drawn to the park by any floral spectacle, or by games or amusements of any sort, he would introduce these features at any cost. In fact, he would value any adjunct to a park according to its effectiveness in drawing people out of their houses and into the wholesome air.

It would require a long article to make a comprehensive discussion of all these points, but, taking up the first suggestion, it may be worth while to say that if we consider the health and comfort of the animals the present site of the menagerie is bad, because it lacks a sunny exposure, and while the cool sea breezes are shut off from it in summer by a ridge, it lies open to the coldest winds of winter. Besides this, it has neither a running stream nor pond which can be kept fresh, and it has a hard, impermeable subsoil instead of one that is open and easily drained. But suppose the open north meadows offered an ideal site for a zoölogical collection in so far as the health of the animals was concerned, the fundamental objection would still remain that this smiling landscape would better serve the purpose for which the park was originally set apart by the city, than if it were occupied by an attractive collection of animals. It is true that even now the menagerie grounds are often crowded, but a Punch and Judy show, a minstrel entertainment or many other exhibitions would draw still greater crowds and cost less money. If it were the primary purpose of a park to furnish the people with different forms of amusement it would have been cheaper at the outset to have taken many small spaces in different parts of the city instead of one large area in the centre of the island. Sixty small amusement parks, each one covering two city blocks, could have been distributed throughout the city, and they would have covered no more land than was taken for Central Park, and this plan would have required little closing of streets or interruptions of traffic.

For amusement purposes alone, then, it would certainly have been unreasonable to condemn for park-space an area comprising more than ten thousand building lots, to shut up twenty miles of streets and to divide the east side of the city from the west as completely as if a river flowed between them. The only justifying reason for taking so much land in a body was to secure breadth of view and spacious scenery. It is not a fancy, but a recognized truth, that such scenery has a genuine value in helping the dwellers in cities to resist the wearing influences of town life and to recover the mental energy thus wasted. Of course, a rural park furnishes pure air and a space for exercise, but the charm of scenery is its highest value, and it is more or less useful according to the degree in which the rural spirit of the place is preserved and developed. Now, it is possible to conceive of a park which contains open areas sufficiently spacious to give broad landscape effects and yet can supply room in the shelter of the wooded portions around these spaces for a zoölogical collection which might not in any way obtrude upon the scenery. But the open meadow-space in Central Park is scant, and it was gained at enormous cost by blasting out projecting ridges of rock and covering them with soil. Trees were planted on the borders of these openings to give them a refreshing park-like effect, and yet the great defect of the park is its lack of broad, tranquil views. Every rod of open meadow which has been created should be scrupulously cherished. There can be no question that any of the grassy stretches of Central Park are much more useful now than they would be if converted into fields for special amusements, and the park will be better than it now is when the menagerie is moved to some ampler space in one of the new parks north of the Harlem River.

With regard to the general subject it may be said that children's playgrounds and playhouses, provisions for music and skating and boating, as well as for tennis and other games, have been provided in public parks, but where most successful they have been introduced incidentally, and not as essential features, and they have constantly been held subordinate to the controlling motive of the design. In the same way an aquarium or a zoölogical garden or a botanical garden would be well placed adjacent to a park, provided it is steadily kept in mind that the object of a museum and the object of a park are completely distinct, and that it is impossible to combine the two so that they shall have unity of purpose.

So long as this rule is kept steadily in view it is not difficult to add features which may have special attractions. It would not interfere with the scenery, for example, and, indeed, it would heighten its detailed interest if as many as possible of the wild flowers which grow in the region about a park should be introduced in certain of its woods or shrub borders or open spaces. This feature would be of use to students of botany in city schools, and it might inspire the young with a desire for investigation in larger fields. Again, it might add to the attractiveness of some of the smaller meadows of a park if their bordering shrubs were selected with special reference to their flowering season. That is, one opening might present the leading shrubs which flower in early May, and another those which flower two or three weeks later, so that a series of gardens would be coming to their best in succession.

Where there is a great park system, like those of Chicago and Boston, large groups might be made of one shrub or tree which while in flower would be sufficiently conspicuous to attract visitors, and when out of flower they need not interfere with the general landscape-effect. Of course, such a scheme could not be used to any extent in so small a place as our Central Park, although some secluded ravine

might be planted in this way, where it would not offend against the general design. Early in June last year we spoke of the magnificent display made in the Arnold Arboretum by a hundred and twenty varieties of the common Lilac all in flower at once. The collection occupying a wide bed stretched for nearly a thousand feet along one of the principal drives, the color of the flowers being well brought out by the green turf on the slope behind them. In a park system connected by broad parkways we might have a thousand Forsythias massed in one place and a thousand Spiræas in another, so as to make a more striking effect at flowering-time than the same number of plants would if scattered along individually. In a natural landscape one often sees ten thousand Red Buds or Flowering Dogwoods, or Wild Crabs or Hawthorns scattered along the edge of a forest, and, of course, the margins of woods and parks can be treated in the same way. If we had half a dozen meadows in a chain of parks, instead of bordering them with a mixture of all these shrubs we could plant each one mainly with a single kind which would make a striking display at flowering-time. There is nothing inharmonious in the landscape as seen from Roan Mountain, with its foreground of a million Rhododendrons, and it is the mass which gives impressiveness to the picture.

These are a few of the ways in which special attractions could be provided, and many others might be suggested, as, for example, the massing of trees or shrubs conspicuous for the bright colors of their fruit or foliage in autumn, but it must always be borne in mind that refreshment pure and simple—refreshment for body and mind—is the primary office of a public park, and although a pleasure-ground may casually help students in botany or in other branches of science, this advantage, as well as the striking displays which can be provided for different seasons, should be mere incidents that do not affect its fundamental purpose.

## The Floating Gardens of Mexico.

THE famous chinampas, or floating gardens, are a never-ending attraction of the City of Mexico, and yet little is known to the general reader regarding these curious places. Contrary to the general belief, the so-called floating gardens of the present day do not float. Many years since, however—in fact, before the conquest of Mexico by the Spaniards—the name was appropriate, for real floating gardens were then common on the lakes in the Valley of Mexico, especially in the immediate vicinity of the city. But when Humboldt visited Mexico (then called New Spain) in 1803, and Abbé Francesco Clavigero (a missionary among the Indians) a few years later, these peculiar possessions of the Mexicans were rapidly diminishing in number; and in 1826 Captain G. F. Lyon informs us that "the little gardens constructed on bushes or wooden rafts no longer exist in the immediate vicinity of Mexico (the city); but I learned that some may yet be seen at Inchimilco."*

Abbé Francesco Clavigero describes the true floating gardens as follows: "They plait and twist Willows and roots of many plants, or other materials, together, which are light, but capable of supporting the earth of the garden firmly united. Upon this foundation they lay the light bushes which float on the lake, and over all the mud and dirt which they draw from the bottom of the same lake."†

The common form was a quadrangle, and the average size about fifteen by forty feet, although some of the largest were a hundred feet in extent. Many of the latter contained a small hut, in which the cultivator sometimes lived; one or more trees were also growing in the centre of these largest plots. The earth used was extremely rich, and this being kept in a moist state by its proximity to the water (the elevation above it being not over a foot), the gardens were productive of the choicest vegetables and flowers, including also Maize.

The gardens of the present day are very different affairs. They do not float, but, on the contrary, are composed of strips of solid ground, usually about fifteen by thirty feet in extent, although some are larger. These plots are intersected by small canals, through which visitors are propelled in canoes. They are constructed by heaping up the earth about two feet above the water. Willows, and sometimes Poplars or Silver Maples, also a species of Cane, are often grown along their banks to keep them from washing down. The nearest gardens to the City of Mexico are along La Viga Canal, a public waterway about forty feet in width and of varying depth. Its source is Lake Texcoco (formerly known as Tezcuco), two and a half miles west of the city, from whence it flows to a point near the town and then returns by a circuitous route to the lake. The gardens are located where the ground is naturally low or swampy.

All produce the choicest vegetables, flowers, and not infrequently fruits, in great abundance, embracing nearly every variety grown in the United States, and others unknown to us. Even in the ditches or little canals beautiful Water-lilies often line the way, while many of the plots are one mass of vari-colored flowers, the most common ones being Roses, Pinks, Geraniums, Poppies and Fuchsias. The great variety of shades and the enormous size of many kinds astonish and delight the visitor from more northern latitudes. The Poppies are more attractive than our finest Pæonies; on certain feast days every one wears a wreath made exclusively from these showy flowers.

The quick and luxuriant growth of the products is mainly due to the daily application of water, which is dipped up in gourds attached to long swinging and pivoted poles, and deftly thrown about. It is needless to say that the cultivator never depends upon rain. Some of the plots are occupied by their owners and their families, who live in charming little houses constructed of cane, and surrounded by all their possessions, often including cows, horses, pigs and chickens. La Viga Canal is almost impassable on Sundays especially, and the same may be said of the beautiful driveways along its tree-lined banks; for Sunday in the City of Mexico is the liveliest and, in many respects, the busiest day of all the week. It is the great market day as well as holiday, and a large number of the craft on La Viga (see illustration on page 433) are loaded with produce of every description from the gardens and elsewhere. The visitor to the floating gardens seldom hides his disappointment on discovering that they are stationary, but he never regrets having visited them; indeed, a day spent on the canal and among the chinampas will long be remembered as one of the pleasantest in Mexico.

Little is certainly known regarding the origin of these famous places. Abbé Clavigero says that when the Mexicans were driven from their native country, ages in the past, they were forced to occupy small islands in Lake Texcoco, where "they ceased for some years to cultivate the land, because they had none, until necessity and industry together taught them to form movable fields and gardens, which floated on the waters of the lake. . . . These were the first fields which the Mexicans owned after the foundation of Mexico." The custom may have originated as above stated, but the following view, founded on a careful examination of some of the oldest works on Mexico, is advanced as the more probable, especially since the Mexicans still retained and cultivated the watery plots after their independence was again established.

For long ages the Valley of Mexico was subjected to devastating inundations. The valley is about sixty miles in diameter, and is surrounded by a continuous wall of hills and mountains. The waters collected on these flow into six principal lakes. The plaza mayor, or great square, in the City of Mexico is elevated a few inches only above the nearest lake—Texcoco. In former times, a prolonged rainy season caused the surplus waters in the other lakes—which have an elevation of from three to thirteen feet above the plaza mayor—to burst their banks and flow into

* *Journal of a Residence and Tour in the Republic of Mexico in* 1826, vol. ii.
† *History of Mexico*, 1807, vol. ii.

Lake Texcoco, which in turn overflowed and flooded the valley. In June, 1629, the date of the last great flood, the city was covered with water to a depth of three feet, and it remained in that state for five years.

The regular fields were, of course, ruined whenever a freshet traversed the valley, and necessity finally compelled the people to depend upon floating gardens for a supply of produce at all seasons, and to prevent a famine. These were moored in places where the rise and fall of the lake waters would not affect them. During the period when floods were looked for at any time, these floating patches were very common, but when the city and valley were partially protected by a gigantic canal in 1789 (commenced in 1607*), by which the main overflow was carried off in safety, they gradually disappeared, until at the present time nothing but the pretty name and stationary plots surrounded by water remains to perpetuate an ancient custom.

Washington, D. C. *Charles H. Coe.*

Fig. 59.—Boats on La Viga Canal, loaded with vegetables and flowers.—See page 432.

## Foreign Correspondence.

### The "Spot" Disease of Orchids.

IN the September number of the *Annals of Botany* (Clarendon Press, Oxford), there is a paper by Mr. G. Massee, of Kew, on what is known by cultivators as Orchid spot. The nature of this disease, the worst of all the enemies against which the Orchid-grower has to contend, has been a much-debated question among physiologists, fungologists and cultivators, some holding that it was fungoid and infectious, others that it was caused by the punctures of insects, and others that it was solely due to wrong treatment, and was entirely under the control of the cultivator. Mr. Massee's investigations go to prove that the last hypothesis was the right one. He set out with the preconceived idea that the disease was fungoid, and at first his researches pointed in that direction. This theory, however, breaking down, a search was made for bacteria, but with a like result. "Failing to induce the disease in healthy plants by inoculation with the expressed juice from diseased spots, even when introduced under the epidermis, thus proving the absence of an enzyme or organic ferment, which would have been due to the presence of fungi or bacteria, this was accepted as evidence of the absence of these organisms."

Experiments were then made with the view to finding if the spot was caused by atmospheric conditions. A young, healthy plant of Habenaria Susannæ was taken from a tropical house and placed in a temperature of forty-one to forty-five degrees, Fahrenheit, for twelve hours, and minute particles of ice were placed at intervals on the uninjured epidermis of the upper surface of the leaves. Twenty-four hours later the points on the surface of the leaves originally covered by particles of ice were pale in color, and within four days every phase of the disease was to be seen. In fact, Mr. Massee succeeded, within the time stated, in producing a very clear and bad case of spot in a plant which previously was perfectly healthy. This result was abundantly corroborated in the garden. A batch of plants of this same species of Habenaria, which had become drawn somewhat in a stove during the excessively hot weather experienced in the early part of the summer, was removed into a cooler house. Within a short time after their removal a spell of cold weather was experienced and the plants suffered a check which resulted in their becoming very badly affected by spot. In the same house were some very healthy plants of several species of Satyrium, which, during the warm weather, grew with exceptional vigor, but when the spell of cold weather came they, too, fell sick with spot.

Mr. Massee found that a drop of cold water was equally conducive to the formation of spot. He also found, after numerous experiments, that the disease did not put in an appearance unless the fall of temperature to which the plant was subjected exceeded nine degrees, Fahrenheit, below the average temperature in which the plant had previously grown. Tropical plants are much more liable to become "spotted" than those grown in a lower temperature, and this was proved by Mr. Massee's experiments, which again agrees with the experience of cultivators. The only exception that occurs to me is the genus Masdevallia, the species of which are almost entirely grown cool, but which are rarely free from spot. Still, experience goes to prove that in their case excessive moisture, particularly at the root, is most conducive to spot. The healthiest collections are those where the plants are allowed far less water than they are popularly supposed to require.

The following extract from Mr. Massee's paper is important as showing that spot generally attacks the younger leaves at a time when they are in active growth: "Irregularity in the appearance of the spot in different specimens of the same species, even when conducted under precisely similar conditions as to temperature, showed that some other undetermined factor exercised an influence. After repeated experiments this proved to be the relative amount of moisture present in the plant. After a pseudo-bulb, with its accompanying leaf, had been removed from a plant and allowed to remain for three days in a dry place, it was found impossible to produce spot by the method mentioned above, whereas with a similar specimen removed from the same plant, and having the pseudo-bulb placed in water at once, fully developed spot could be produced in four days. Similar results were obtained when experiments were made with entire plants; those copiously supplied with water at the root and grown in a high temperature spotting readily; whereas plants in a resting

*The drainage canal, commenced by the Aztecs, has been greatly improved and only recently finished by the Mexican Valley Drainage and Canal Company, so that all surplus water and the sewage of the city is now completely carried off.

condition, scantily supplied with water and kept in a low temperature, usually resist all attempts to produce spot artificially."

Orchids generally fall a prey to spot in winter and early spring. If the temperatures of the houses are higher than they ought to be at these seasons spot is almost certain to appear upon such plants as Phalænopsis, Vanda, Aërides, Dendrobium, and almost always upon the young leaves. Carelessness in stoking or ventilating or copious damping down in damp cold weather are the chief causes of spot at these times, as every experienced cultivator knows. What we did not know, however, previous to these investigations was whether the disease itself was infectious and grew from a very small beginning in spite of all the cultivator could do, and whether, as some held, when once spot attacked a plant it was next to impossible to save it. I am not quite satisfied that the particular form of disease investigated by Mr. Massee is the only one that affects Orchids, and which falls under the same designation. There is a spot-like disease which attacks the stems more than the leaves, and which may often be traced from the base upward. There is also that "galloping consumption" into which Cattleyas of the character of C. Dowiana and C. Hardyana fall, changing within a week from apparently quite healthy plants into black watery masses as though they had been boiled. I suppose Mr. Massee will say that the ordinary spot which attacks Orchids, like influenza which attacks mankind, is not the only form of disease which may spring from a chill. Cultivators generally will be grateful to him for clearing away the doubt and mystery in which Orchid spot had become wrapped. We know where we are now, at any rate.

Mr. Massee summarizes his observations as follows: The Orchid disease known as spot is of non-parasitic origin, the initial cause being the presence of minute drops of water on the surface of the leaves at a time when the temperature is exceptionally low and the roots copiously supplied with water.

The effect of the chill produced by the drops of water under the above-mentioned conditions is to cause plasmolysis of the cells of the leaf underlying the drops; this is followed by the precipitation of tannin and other substances, and eventually the complete disintegration of the cells.

Spot, in the broadest sense of the term, which would include the effects of exceptional meteoric conditions on the living parts of plants, more especially the leaves, when growing in a state of nature, is, in the case of cultivated Orchids, mainly, if not entirely, caused by the three following conditions: (1) too high a temperature; (2) too much water, and not sufficient air in contact with the roots; (3) watering or spraying with a falling, instead of a rising, temperature.

The paper is illustrated by colored figures of the leaf of Eria rosea and Bulbophyllum Careyanum, showing the cells and their contents and the process of development of the disease.

London. *W. Watson.*

## New or Little-known Plants.

### Kalmia cuneata.

THIS is probably one of the rarest plants in eastern America, and there is no record that any botanist has seen it alive since Nuttall's time until two years ago. It was discovered in Carolina by the French botanist Michaux, who left few plants undiscovered in the region which he explored, and was described in his *Flora Boreali-Americana*. A flower and a leaf of Michaux's specimen are preserved in the Gray Herbarium. In the Herbarium of the Philadelphia Academy of Sciences are two specimens in fruit labeled by Nuttall and collected in South Carolina. The labels give neither date of collection, exact locality, nor the name of the collector. Taken late in the autumn, these specimens show, as Nuttall states in his *Genera of North American Plants*, that the leaves of this species are deciduous, a fact which every other writer on the genus since Nuttall has overlooked. Nothing more was seen of Kalmia cuneata until the winter of 1893–94, when it was found by Mr. W. W. Ashe, of the Geological Survey of North Carolina, who detected it in a Pine-barren swamp between the Cape Fear and Black rivers, Bladen County, North Carolina, about ten miles north-east of Whitehall, a small village on the Cape Fear River.

Kalmia cuneata (see illustration on page 435 of this issue) is a shrub with slender straggling stems, from two to three feet tall. When they first appear the branchlets are bright red or green tinged with red, and are glandular-pubescent; during their first winter they are dark red-brown and slightly puberulous, growing glabrous and darker-colored in their second year. The terminal buds are linear-lanceolate, very acute, covered with loosely imbricated dark red scales nearly a quarter of an inch long, and are more than twice as long as the ovate-acute lateral buds. The leaves are alternate, clustered at the ends of the branches, entire, oblong-obovate, gradually narrowed at the base, narrowed and acute or rarely rounded at the apex, which is usually furnished with a minute mucro, sessile or short-petiolate, and deciduous; they are thin, dark green on the upper surface, pale yellow-green and pilose, with short white hairs on the lower surface, from three-quarters of an inch to an inch and a half long and from a quarter to a third of an inch wide, with stout yellow midribs and obscure primary veins arcuate within the slightly thickened revolute margins, and reticulate veinlets. The flowers, which appear in June, are borne on slender drooping pedicels often nearly an inch in length and covered with scattered glandular hairs, and are produced in few-flowered umbels from buds formed in the axils of the two or three upper leaves of the previous year, and are thus crowded at the base of the shoot of the season. The calyx is orange-green and persistent under the fruit, with ovate-acute lobes. The corolla is slightly folded, light green and puberulous in the bud, and after expansion is from one-half to three-quarters of an inch across, slightly lobed, creamy white, and marked at the base of the limb with a broad light red band. The capsules are slightly roughened, about an eighth of an inch in diameter, and are borne on long slender drooping stems. In the swamp on the Cape Fear River, Kalmia cuneata grows in sterile sandy, and often submerged, soil, associated with Cassandra calyculata, Andromeda speciosa, Myrica cerifera, Ilex glabra, Ilex lucida, Cyrilla racemiflora and Pinus serotina. During the summer of 1894 it was introduced into Mr. George W. Vanderbilt's Arboretum at Biltmore, North Carolina, where it flowered in June of the present year. For the specimens which Mr. Faxon has figured in our illustration we are indebted to Mr. C. D. Beadle, of the Biltmore Arboretum. The flowering branch is from a plant cultivated at Biltmore. *C. S. S.*

## Plant Notes.

QUERCUS COCCINEA.—The Scarlet Oak always comes into mind with the thought of the splendors of our autumn forests. No other American tree flames into more brilliant color or retains it longer than this Oak, which often is in full glow after the leaves of its companions have fallen, and not infrequently its scarlet tints are retained until the ground is white with snow. The tree, however, is beautiful at all seasons of the year. At its best it is seventy or eighty feet high, with a trunk two or three feet through, comparatively small branches and a somewhat open head, so that it has not the appearance of rugged strength which characterizes some other Oaks. It has a certain grace of outline, however, and its thin glossy leaves and dark smooth bark are distinct and attractive. It is not so commonly planted in pleasure-grounds as the Pin Oak or the Red Oak, but it can be moved without difficulty; it will grow rapidly on thin light soil, and it makes an admirable street tree.

Spiræa Thunbergii.—This useful shrub is well known in gardens, and we speak of it now simply to call attention to its singular beauty at this season. It is one of those foreign plants whose foliage colors even more brilliantly than that of our native plants. Indeed, our own Spiræas have little autumnal beauty, and do not approach in delicacy or richness of color some of the Asiatic species like the old-fashioned S. prunifolia, which is now a brilliant scarlet, or S. Thunbergii, which has just begun to take on its delicate rosy-pink hue, which later on may turn to orange. The plant holds these colors, too, later than any other of the genus, and before its leaves have all fallen in November its small white flowers often open. It is needless to add that the plant is covered with its delicate little flowers early in April, that its fine light green foliage is especially graceful, that its habit is good, that it is easily propagated, so that, altogether, it ranks as one of the most useful of shrubs.

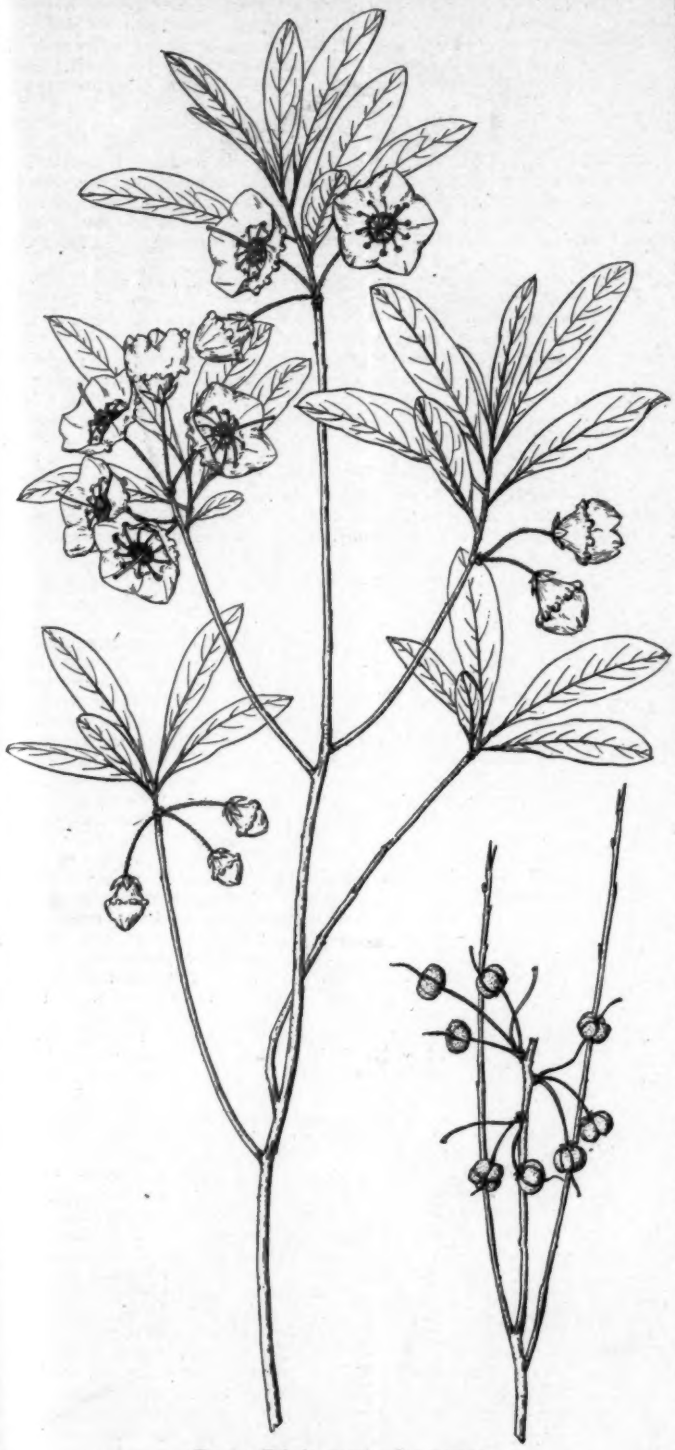

Fig. 60.—Kalmia cuneata.—See page 434.

Kniphofia aloides (Tritoma Uvaria).—There are few plants more beautiful and effective than this; it is unaffected by the dry weather, and flowers during a time when there are comparatively few really attractive flowers. The tall spikes rise to a height of nearly three feet; the long, tubular scarlet flowers with crimson segments are collected in a dense spike, and make a striking picture. The long, narrow, deep glossy green leaves in dense tufts are also ornamental. The roots are fleshy, enabling the plant to withstand drought, although it thrives best in rich moist ground. Bold masses of its foliage and flowers are very effective in large grounds on the borders of shrubberies or isolated nearby on the lawn. For the cottage garden, where only a few herbaceous plants can be had, this one is, perhaps, the best one for autumn flowering.

Coreopsis delphinifolia.—Although one of the smallest members of this beautiful genus, this species has great value as a decorative plant. It grows to a height of ten or twelve inches and measures often as much across. It is very bushy, and produces innumerable small heads of pale yellow flowers in August and September. The leaves are small, three-parted or linear and smooth. The heads are produced in leafy corymbs, and measure about an inch across. It grows in dry barren soil, and is a typical plant of some of the poor sandy districts of the south. Like all the Coreopses, it is easily increased by seeds. This is a most useful plant for naturalizing in large parks and grounds where rocky and gravelly soil abounds. It will add life and color to the landscape without obstructing the scenery in any way.

Begonia Evansiana.—New hybrids and varieties of Begonias are raised every year, but few of the later introductions can surpass this old and beautiful species. Introduced from Japan or China early in the century, it is now comparatively rare in cultivation, although it is one of the best and hardiest kinds. It is a graceful, shrubby plant, growing to a height of about two feet, with large obliquely cordate, acuminate leaves, slightly lobed and coarsely dentate; deep green on the upper surface, with reddish veins, and red on the lower side. The stem is slender, with reddish swollen nodes. Male and female flowers are produced in drooping, axillary cymes from the same axis, on slender peduncles. The male flowers measure fully an inch across, having well-developed petals and a large cluster of yellow anthers. The ovary of the female flower is large, oblique, three-winged, with two petals well developed and the two inner ones sometimes wanting or rudimentary. Stigmas large, spirally twisted, yellow. The flowers appear early in September and remain beautiful a long time. The species is very floriferous, and the handsome, rosy flowers sometimes cover the plant entirely. It is one of the very best of Begonias for bedding. The bulbs endure the winter as far north as Washington, and in vol. i. of this journal Professor Massey wrote of a bed of these plants in northern Maryland which came up strong in the spring after enduring a temperature of eighteen degrees below zero.

Spathiphyllum commutatum.—This ornamental stove-plant, nearly allied to the Anthuriums, is an elegant species, growing to a height of about two feet and flowering quite

freely. The ovate-oblong leaves on erect, slender petioles are deep green and membraneous in texture. The spathe is flat, oblong-lanceolate, pure white and showy; the spadix is cylindrical. Grown in company with Anthurium Scherzerianum this is a very appropriate and useful plant, the white flowers contrasting beautifully with those of the scarlet Anthurium. This genus contains several other very ornamental plants, such as the pure white Spathiphyllum candidum, the large-flowered S. cannæfolium and S. floribundum, all dwarfer and more compact in habit than the present one. Some of the species are very fragrant. All thrive in a soil composed of equal parts leaf-mold and peat, with an admixture of some dried cow-manure and broken pieces of charcoal. They should be grown in a moist and warm atmosphere and partially shaded.

## Cultural Department.

### Some Good Chrysanthemums.

CHRYSANTHEMUMS at the Waban conservatories, Natick, Massachusetts, were never better than now. Some of the finest cut blooms ever exhibited in Horticultural Hall, Boston, came from this place last season. All the best standard varieties are grown, and all reputable new ones are tested. It is a good place to compare notes.

The variety H. L. Sunderbruck still holds first place here among early yellow sorts. In richness of coloring no other variety, except Golden Wedding, approaches it, and when in mass it fairly dazzles the eye. It is a charming flower of regularly incurved form when at its best; and when, later, a few florets undress, it is to many people still more attractive. One seldom sees E. Molyneux in its best form. Its grand, irregularly incurved, crimson and gold blooms are considered indispensable on the exhibition boards in the old country, and no dozen could expect to win without it. It is the one variety above all others which shows the cultural skill and patience of British growers. Cuttings are taken some time in December. The first break occurs in May, and the second from the middle to late August, from which a crown-bud should arise to give a perfect bloom. These are all considerations of importance. A crown-bud started too early will give a malformed bloom of poor color; if started too late an unfinished bloom will follow. Cuttings struck in March in this country will, with generous treatment, reach the first-break stage in May, and from this time forward the methods of culture are essentially the same as pursued with ordinary varieties, taking the August crown.

All lovers of Chrysanthemums are enchanted with the variety Mrs. Henry Robinson. It was raised by Pitcher & Manda some years ago, who apparently did not realize its value. An English grower and introducer, Mr. H. J. Jones, of Lewisham, London, discovered its worth and reintroduced it to the United States last season. It is, without doubt, in habit, size and form of flower and in purity of color, the finest early white variety ever raised. It is a loosely, yet perfectly and gracefully incurved bloom of the largest size. Sunrise, as an early crimson and gold variety, is destined to hold an important place. It is, so far, the first early variety of its color which every one can grow, being good on all buds. It is evidently derived from E. Molyneux, and, though a grand flower, it lacks the finish characteristic of its prototype. Mrs. M. J. Parker, Jr., is correctly named the pink Ivory, being the perfect counterpart of that flower in all but color. Nemesis is another early pink variety of dwarf habit. The flower is of better build, being neatly incurved, but less firm in texture, and on that account may not carry as well or last as long when cut. J. H. Troy, as an early white, is likely to be a leading sort; so also Philadelphia; but with Mrs. Henry Robinson fresh in my mind's eye it is hard to do them justice.

Wellesley, Mass. *T. D. Hatfield.*

### The Meadow Saffrons.

LATE in autumn, when everything else is going to rest, the Colchicums, or Meadow Saffrons, begin to open their buds in woods and gardens. One species, growing wild in sheltered woodland meadows in middle Europe, is as remarkable for the quaint beauty of its flowers as for the tardiness of their appearance. It is commonly cultivated in the cottage gardens all over the Continent and in England, and forms a pleasing feature of the late autumn scenery when growing in masses in sheltered positions among the fallen leaves.

The best and most natural position is a rather low and shallow lawn that will remain sufficiently moist during the summer, for, although flowering so late, the plants are doing their best in the way of growing from the earliest spring. All Colchicums should be planted rather deep, four inches, or even more, in dry locations. A sandy loam, enriched by plenty of well-decayed horse-manure, is preferable to any other soil. It is best to plant them in irregular masses in the lawn, where they may push up among the grass. For this purpose the sod of the selected place should be carefully removed, the soil, if unsuitable, dug out to a depth of a foot or more and replaced with fresh suitable soil, which should be trodden down firmly so as to leave the lawn in a proper condition after finishing the work. The large, egg-shaped bulbs should then be planted deep and firmly, the mass thickest in the more central parts and gradually thinner toward the edges, so as to make a natural appearance when in flower. After planting, the lawn can again be leveled and sodded.

It is not necessary to make regular beds; the plants will do well in the grass, but borders and open spaces in shrubberies may also be utilized, although they will there generally be hidden from view or covered with leaves.

Some of the species, Colchicum Parkinsonii, for example, are curiously colored, the white petals being marked with regular purple spots like squares on a chess-board. C. autumnale, the common species, throws up large masses of light purple flowers, four inches high above the ground. C. speciosum is the largest, producing immense flowers of a purplish-crimson color. There are also double-flowered forms, but these are not as desirable as the single ones. The autumn-flowering Colchicums are entirely leafless when flowering in October or November, the last vestige of the summer foliage having dried up long before.

Newark, N. J. *N. J. Rose.*

### Wintering Aquatics.

AQUATICS are increasingly popular, and no garden is considered complete without some representatives, if only one or two tubs compose the water-garden. These small efforts are often the beginning of much pleasurable experience and permanent love for these plants. The advice has often been given to store the tubs in a cellar, but hardy varieties and tender varieties need different treatment. Hardy varieties will do well in a cold cellar if it can be kept at about thirty-five degrees, Fahrenheit, and not above forty degrees; but the trouble is to find such cellars, for in most cases they get warmer as spring approaches, and the plants start into growth before it is safe to put them out-of-doors. Such growth will not stand exposure to the light and air, and the plant is weakened and may not start again for some time, and then only feebly, with disappointing results. The greatest care is necessary to keep the plants dormant until it is safe to put the tubs outside in the spring. One of the safest methods of wintering hardy Nymphæas, and Nelumbiums especially, if the tubs are plunged in the ground, is to leave them there, place a large box or frame over each tub, fill it with leaves, fern or salt hay, cover this with a shutter or boards and secure the same against storms and high winds. Before covering the tub it should be filled with water and a piece or two of board placed over it to keep the leaves out. If two or more tubs are in use they should be set together, thus making one covering and protection suffice. If the tubs have to be moved to some spot for protection, a warm, sheltered one should be selected in front of a greenhouse or other building, with a few boards. Snug winter quarters may easily be contrived, and if a hot-bed sash can be utilized it will afford much protection against frosts in spring, besides lengthening the season three to four weeks.

A good tank for growing aquatics is one made of brick and Portland cement, or concrete, finished with Portland cement, of a size that can be conveniently covered with a hot-bed frame and sash in winter. With a lining of leaves or stable-manure, salt hay or the like, this will prove satisfactory. It will be necessary to examine the tank during mild spells, especially as spring approaches. The amount of covering will depend on the severity of the weather. Such tanks, with frames and sashes for winter protection, and with some heat, will save the plants from injury by the first cold snap and keep them in flowering condition for a considerable time. In the spring, growth will commence some weeks before any start is made in exposed tanks.

If the tanks can be fitted up with a hot-water pipe the plants of the tropical varieties can be had in flower throughout the winter; but such tanks are not suitable for all purposes and places. If the tank or artificial pond is of irregular shape some protection will be necessary to prevent the masonry from

cracking. This attention is even more important than that required by the plants, as in most cases the water is sufficiently deep to prevent the plants from freezing. This is the best way to winter the hardy varieties, provided the masonry is not above the ground-level; in that event it is safer to remove the plants and empty the tank or basin and place a few poles or pieces of lumber across the tank to bear the weight of the protecting material and keep it out of the water. On this, old lumber should be laid near to the edge and projecting about two feet beyond the tank. Above this cover leaves should be heaped and the ground also covered about two feet from the tank with a thickness of twelve to eighteen inches. On these leaves there should be a covering of salt hay or fresh stable-manure to keep them in place, and branches should be laid over the whole to hold the covering against winds. This protection can be regulated according to the severity of the winters in different sections of the country.

Tender Nymphæas may be wintered in a warm cellar, but to avoid the inconvenience of moving the tubs when full of soil the plants may be taken out of the tubs, cutting off a quantity of the largest leaves and roots, and putting the same in pots just large enough to conveniently hold the plant. Several plants can be put into one tub in this way, and will finish their growth and ripen the tubers, which may then be placed in pots of sand and stored away until wanted in spring. Give the plants all the light possible until they die down. The tubers should not be allowed to dry, although they should not be put into water until it is intended to start them. If a greenhouse is available, the tubs can be stored away under the benches, and the plants can be brought forward much better and earlier in the spring.

Riverton, N. J. *W. Tricker.*

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**Elæagnus longipes.**—Although this shrub has attracted not a little attention in recent years (see Garden and Forest, vol. i., fig. 78), it has not come into such general use as its merits would warrant. It is, however, planted more and more every year. The shape of the shrub, together with its curious leaves, gives it a distinct value for ornamental planting. It is of a low-growing, rather spreading habit, with dark reddish-brown twigs, which are thickly coated with small scales. The leaves are very attractive, being of a heavy texture with a dark green upper surface, while the under surface is of a glistening silvery shade, sparingly dotted with small scales similar to those that occur on the branches. It bears an abundance of bloom in May, but the flowers are small and unattractive. The berries are as large as the smaller cherries, but are more oblong in shape. The skin is of a dull brownish-red color, covered thickly with the small scales similar to those that are found on the branches and leaves. The pulp is sweet and pleasant, but the skin is somewhat astringent. Each fruit contains a single conical-ribbed seed. The berries ripen in July and are produced in great abundance, but they would add more to the attractiveness of the shrub if they were less dull in color and were not partially hidden by the leaves. Some writers have advocated the extensive planting of the Elæagnus for the sake of its fruit, but its value for this purpose remains to be demonstrated. With proper attention to cultivation and selection there would seem to be no reason why a strain of it could not be secured which would be useful for its fruit. It already possesses two desirable qualities, namely, productiveness and hardiness. Plants received at the Experiment Station in 1892 have made good growth and are now in excellent condition, though they have received no protection in winter. The plant is propagated either from seed or by cuttings.

**Citrus trifoliata.**—While this member of the Orange family has not come up to the expectations of some growers as a hedge plant for the north and west, yet it is of interest to note that a plant received at this station in 1892 is still alive, though it has had no protection. It makes a sturdy growth each season of about three feet, which is as regularly killed back to the snow-line in winter.

Experiment Station, Geneva, N. Y. *J. P.*

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**Leonotis Leonurus.**—Last autumn a spray of a plant with labiate, orange-red blossoms was brought to me for identification. I set it down as a near relative of the common garden Salvia. I have since found it to be Leonotis Leonurus, the Lion's Tail plant, a native of the Cape of Good Hope. It is not a new plant, having been introduced to European gardens in the early part of this century, and a few years ago was offered by Peter Henderson & Co., of New York. It was quite largely disseminated at the time, but is now scarce in northern gardens. As it will endure a few degrees of frost and is a vigorous plant it may be common in southern gardens, where a friend tells me he has seen it under the name of the Devil's Paint Brush. Gardeners who have grown it tell me they never succeeded in getting it to bloom. Whether it be the season or the haphazard treatment accorded, it certainly has done well with me, and is now blooming quite freely in a dug-out garden frame. It has a distinct Sage-like appearance, and casually might be taken for a Salvia. The flowers, however, are not borne in terminal clusters, but in whorls, as they occur in the genus Phlomis, to which it was at one time referred. Cuttings were struck early in December, and the plants grown to a goodly size, though starved, in four-inch pots. When the month of May came they were planted out in the regular order, and made bushy plants three feet high and as much in diameter. Some were topped and others untouched. These latter have bloomed best, showing, as my friend suggested, that a good foundation of solid growth is needed in order to have the plant flower well. In lifting such plants it is difficult to get any considerable ball of earth, and it is well to have pots at hand to drop the plants into. After a few days in the shade of a Pear-tree our plants soon established themselves, with the loss of very few leaves.

Wellesley, Mass. *T. D. Hatfield.*

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## Correspondence.

### Small Conservatories.

To the Editor of Garden and Forest:

Sir,—I have lately inclosed one of my piazzas, facing south, with glass, and propose to use it as a winter garden or conservatory for a miscellaneous collection of flowering and decorative plants, most of which have been transferred from the borders and are now in pots. I suppose that the surplus heat from the dwelling, with the help of an oil-stove, will keep out any frost likely to occur in this latitude, so that with the sunny exposure I shall have no trouble from lack of warmth. But I have often noticed that plants in such places wear anything but a happy look, and I should like some hints on managing a winter garden of this sort.

Lebanon, Pa. *S. A. A.*

[Our correspondent opens up a subject which will be of interest to many, as such inclosures are often the most available as well as the cheapest arrangements for wintering plants where they may be enjoyed. Often they are not enjoyed for the reason that their wants are not understood and they fail to grow. The cultivation of the large majority of plants out-of-doors is a comparatively simple matter. Nature supplies most of their wants so long as they are not under artificial conditions. But when they are under shelter then their wants must all be anticipated and met. It is too often forgotten that the leaves are the principal assimilating organs of plants, and as the carbon which they absorb occurs in air in very minute proportion they require a great abundance of that element. Water is next needed to dissolve the food they take and fill their tissues. Without warmth and light no plant activity is possible. Hence, we have the simple problem to provide an abundance of pure, properly warmed air with liberal but not too great a supply of water. The first requisite in an inclosed garden is sufficient energy in the way of heat to keep the water moving and the fresh air warmed up. Too many, like our correspondent, trust to makeshift arrangements, which, while they may suffice to prevent freezing, yet fail to supply sufficient heat energy. In cold weather it is, therefore, necessary to close all ventilators, so that the air is devitalized and the soil in the pots becomes cold and perhaps sodden with stagnant water, under which condition the best-intentioned plants cannot grow, for there are many cloudy days and one cannot rely on sunlight. A small heater, which may be placed in the cellar, with two or more pipes in the conservatory for hot-water circulation, is the best method of heating such structures. These heaters are now cheap, and burning slowly at ordinary temperatures they consume comparatively little fuel. In fact, they are more economical than oil-stoves, to say nothing of their freedom from danger and offensive and destructive vapors. Ample ventilation should always be provided in plant-houses, and while plants do not like draughts, they do not mind fair amounts of fairly cold fresh air if they have not been unduly forced and made

soft in tissue. It is usually better to waste heat through an open ventilator than to keep a house close and lifeless and breed thrips. The proper temperature of a greenhouse will depend on its contents and on the season. With the usual amateur collections it is best to keep the temperature rather low till the end of the year, thus allowing the plants to slightly rest, and gradually increase the heat as the days lengthen. It requires much discrimination to properly water plants in pots. No plants should ever be allowed to be so dry that their feeding roots are destroyed; on the other hand, a sodden compact soil will prove fatal. It is only by experience in a houseful of plants that one can discover which require frequent and which more rare attention. In winter the morning is the time to water and syringe the foliage. If it is necessary to water late in the day the foliage should not be wet or the house made too damp, otherwise, with declining temperature, water on the foliage will develop fungus or spot on many leaves, which is as fatal to the leaf-cells as it is to the beauty of the foliage.—Ed.]

## The Chautauqua Grape Belt.

To the Editor of Garden and Forest:

Sir,—The largest strip of territory devoted to the cultivation of table grapes east of California and the Rocky Mountains stretches from the hills surrounding Chautauqua Lake, in New York state, to the blue waters of Lake Erie, and then along the shores of Lake Erie for a distance of about one hundred miles.

The Chautauqua Grape belt, as it is called, comprises the vineyards of Chautauqua County, New York, and of Erie County, Pennsylvania. There are in this belt about 20,000 acres of vines. The rapid growth of viticultural interests in this section of the country will come in the nature of a surprise to most people. The industry dates back some twenty-five years, but the greatest progress has been made within the last fifteen years. The statistics of 1890 show that there were 9,180 acres of bearing vines and 1,620 acres of non-bearing vines, making a total of 10,800 acres of vineyard in the Chautauqua belt. Since then—that is, in only five years—the acreage of vineyards has increased one hundred per cent. There is some question whether the census of 1890 was complete, for, according to figures furnished by Mr. George C. Snow, of Penn Yan, who was Superintendent of Viticulture at the World's Fair, a thorough canvass of the Chautauqua district in March, 1893, showed that there were 17,624 acres of bearing vines and 7,500 acres of non-bearing vines, making a total of 25,124 acres of vineyard. It may be here stated that the vineyard acreage of the Chautauqua belt has been at a standstill, or decreased, during the past two years, owing to the low prices for grapes and the general unsatisfactory condition of the market.

In the early years of the Chautauqua industry the growers made large profits. Then the grape crop brought from three to four cents a pound, or from $60.00 to $80.00 per ton. Many vineyards yielded three tons to the acre, and some as much as four tons. Even at $60.00 a ton, the Chautauqua grape-growers cleared about one hundred dollars net per acre. A well-known grower at Brockton, who had fifteen acres of vineyard, in one season made over $1,500 from his crop.

These and other inducements led many people to begin the grape business, and just about ten years ago there was a boom in the Chautauqua belt. The price of good grape land suddenly advanced from $50.00 an acre to $150.00, and some of it could not be bought for less than $200.00 an acre. Farmers who did not make a specialty of grapes had small vineyards of five, ten or fifteen acres. Those who made grapes their chief crop often had from forty to fifty acres of vines. There are several vineyards in the Chautauqua belt of from fifty to one hundred acres. One of the most extensive is that of Garret Ryckman, at Brockton, New York, consisting of over one hundred acres. The vineyards of R. J. Quale and of the Hanover Grape Company, at Silver Creek, are each about one hundred and ten acres in extent.

For some years every one believed thoroughly in grapes. There had been no seasons of failure of the crop, and prices were high. Meanwhile, new vineyards were coming into bearing at the rate of about one thousand acres a year. Elsewhere the acreage of grape land had also increased in the state, especially in the Hudson River and the Lake Keuka districts. The result was that the markets of New York, Boston and Philadelphia were flooded with grapes. Then came poor yields, together with low prices, and many persons have become discouraged and have abandoned the unprofitable business. This year, with the disastrous freeze in May, will be remembered as one of the worst in the history of grape-growing in the Chautauqua belt. The grape growers suffer from many evils, but principally from overproduction. There is now a surplus of grapes in the market. Almost every week during the shipping season the markets of the large cities break under the pressure, and grapes are often sold at prices that do not much more than cover the commissions and freight.

In good seasons the annual yield of the Chautauqua vineyards is about 15,000 tons, or 30,000,000 pounds of table grapes. To ship this immense crop to market requires about 2,000 cars, and each car holds about 2,500 baskets. The fruit is about equally distributed between eastern and western markets, although during the past three or four years many new markets for New York grapes have been opened in the far west, so that the Chautauqua growers now send their grapes to Chicago, Cincinnati, St. Louis, Omaha, Kansas City, Denver, Minneapolis, St. Paul, and even to Winnipeg, Manitoba. About seventy-five per cent. of the crop is handled by the Chautauqua and Northeast Grape Union, at Brockton. This Union is an organization of the growers of the different sections of the belt. One of the principal objects of the Union is to market the fruit of the members directly, thus saving the commission dealer's profits, and at the same time to have quick returns and prompt distribution of the proceeds of sales. The grapes are graded according to quality, and every shipment is inspected before it is sent to market. The grower is required to place his name, together with the mark of the Union on every basket, and in this way unripe or poorly packed fruit can be traced back to the offender.

The crop is marketed on the coöperative or pooling system. Shipments along the entire belt are pooled daily and weekly, and checks are promptly sent to each grower for his pro rata share. Thus, the fruit is marketed at less cost and at less trouble than would be possible by individuals. The grower is relieved of looking after his shippings, sales and collections. The Union has a large number of traveling salesmen in all the principal markets, and its representatives keep the head office posted continually as to the supply and the prices of grapes at different points.

The bulk of the Chautauqua grape crop is of the Concord variety. The location does not seem suited to the ripening of such late varieties as the Catawba. The shipping season begins about the first week in September, and is practically over after Thanksgiving, or about the first of December. This gives the Chautauqua grower a much shorter range of season than the Lake Keuka grower, who supplies the market with grapes until March or April.

Several systems of training vines are in vogue in the Chautauqua Grape belt. Some favor the Kniffen system, but the majority of growers use the fan system. In the first year the vines are cut back to three or four buds; in the second year they are cut back to five or six buds, and three of the strongest shoots of new growth are left for the bearing arms of the third year. The best two canes are then tied to the wire, and after that each year two or three of the best new canes are trained on the trellis in fan shape.

New York. *L. J. Vance.*

## The Lily, Melpomene.

To the Editor of Garden and Forest:

Sir,—On page 427 of your issue for October 23d, Mr. Orpet says: "The kind we have always regarded as the best dark form is known in trade-lists as Melpomene. This is a native of Japan, and in no way connected with the kind raised by the late C. M. Hovey, of Boston, which was a hybrid between Lilium auratum and L. speciosum." This can hardly be correct, since L. auratum was not introduced from Japan until 1860, while Mr. Hovey, who was very successful in raising L. speciosum from seed, showed at the Massachusetts Horticultural Society's exhibition in 1853 nine seedlings which he named after the Muses, Melpomene being of the number. This is the only one of the nine now in existence, the others having dropped out because they did not possess characters sufficiently distinct to be noticed by the ordinary observer. That Hovey's Melpomene is identical with what Mr. Orpet considers the best species from Japan, I have always believed, but it is entirely different from the cross between L. auratum and L. speciosum, which was not produced until about 1870.

Floral Park, N. Y. *C. L. Allen.*

## Color Bands on the Apple.

To the Editor of Garden and Forest:

Sir,—A band of bright red or yellow is often seen on the apple, extending from the stem to the calyx. These stripes of color are as perfect and well defined as if laid on by an artist's brush. The cause of this phenomena has never been satisfactorily explained, but the theory most commonly advanced is that color marks are due to the effects of foreign pollen. It is probable, however, that the bands are a form of variegation in the calyx of the flower similar in character to the red bands in the petals of the Carnation or Rose. In the Apple-flower the calyx is united with the ovary, and as the fruit ripens the adnate calyx thickens and becomes the edible portion, while the core, which consists of five carpels, is the true fruit. If, now, the color band was due to foreign pollen, one-fifth of the entire fruit would be affected, but, on the other hand, the color resides only in the epidermis, which is a portion of the calyx. When the causes of variegation are known, then the explanation of color bands can probably be made.

Cornell University. *G. Harold Powell.*

## Recent Publications.

### Blackberries.

*Bulletin No. 99*, issued by the Horticultural Division of the Cornell University Experiment Station, is devoted to Blackberries. It is written directly for the use of fruit growers in western New York, but it contains much that is of general interest, and we herewith present in a condensed form some of its suggestions and directions.

Soil.—A deep, mellow, clay loam which contains considerable humus and crumbles rather than bakes in the furrow, is the best for the Blackberry. Open, gravelly lands are too dry, and since the plants need much water it is important to plow all hard lands deep so that the roots can reach permanent moisture. On flat lands with a high subsoil, unless tile-drained, the bushes will suffer in winter and the fruit will be injured by summer droughts. Strong yearling plants from suckers or root-cuttings are best to begin with and should be planted in the spring.

Planting.—The plants are set in the furrow six or seven inches deep, two to three feet apart in the rows, which are eight feet apart. This gives space enough for two horses and a spring-tooth cultivator, which is the best means of keeping the plantation in good condition. Potatoes may be grown between the rows the first year, and it is possible by high cultivation to obtain two crops of Strawberries before the Blackberries smother them. Three or four canes should be allowed to grow the first year, and they will bear some fruit the following season. They should be headed back when they reach the height of two or three feet.

Training.—The canes springing from the root one year bear fruit the next, and then their usefulness is ended. These canes can be cut in August or September, or the operation can be delayed to a less busy season, but they should always be cut off before the following spring close to the ground, so that other canes will sprout from the root to take their places. A strong root may send up from ten to twenty shoots, but only a few of them should be allowed to remain, the number being determined by the vigor of the plant, the closeness of planting, etc. Five or six canes will usually suffice, and if the very best fruit is desired this number may be reduced. The strongest canes should be left, the others pulled out when they are four or five inches high, and the superfluous shoots should be removed several times during the season. When the growing canes are two and a half or three feet high a couple of inches of their tips are cut off, and the plantation should be gone over three or four times as the different canes reach the desired height. The vigorous laterals should be allowed to push out and grow their full length and should not be shortened in until the next spring. How much they should be cut depends on various circumstances. Some, like Wilson's Early, bear fruit close to the cane; others should be left longer. Some growers delay the pruning until the blossoms appear, and the laterals are left from twelve to twenty inches in length. As these bear most of the fruit it is important that they make strong, well-matured growth and that the grower shall familiarize himself with their habits. It is important, generally, that the main cane should be headed in early so that the laterals should have time to make a hard growth and start down low so as to prevent the cane from tipping over with its load of fruit. Plants thus managed will need no stakes or trellises, although a simple wire may be stretched along each side of the row and secured to stakes to keep them from lopping. Along the Hudson River plants are trained after the manner of Grapes on two-wire trellises. The young canes are headed just above the upper wire and are tied to it where they will least interfere with the ripening fruit. The canes may remain on the wires all winter, or they may be laid down for protection and tied securely to both wires the following spring. This necessitates one summer tying for the young canes and one spring tying for the bearing canes. It is not the best practice to tie them to a single stake, as the fruit will be too much massed in the foliage, although Dewberries can be profitably handled this way.

Winter Protection.—Hardy varieties, judiciously grown and pruned, do not need this in western New York. In colder climates the bushes are tipped over and covered late in fall. One man goes ahead with a round-pointed shovel and digs the earth six inches deep from the roots, a second man places a fork against the plant a foot or so above the ground, and by pushing it and stamping against the roots with his feet lays it over, the third man covers the plant with the earth that has been removed or marsh hay. If the variety is a tender one the whole bush is covered two or three inches deep. Hardy varieties only need a few shovelfuls of earth on the tops of the canes. If frosts are feared they may be left under this covering until Corn-planting time, but the bushes must be watched in spring and raised before the buds become soft and white. This method of laying down the plants costs less than ten dollars an acre, and the slight breaking of roots is no disadvantage. The operators must be careful not to crack or split the canes, and the method should be varied, as the canes of some varieties are stiffer than others.

Cultivation.—Surface tillage should be begun early in the spring to preserve the water. If plowed early, a spring-toothed cultivator should be run through the plants every week, especially after a rain, before the soil bakes. After the crop is harvested one cultivation is given to loosen up the ground which has been tramped down by the pickers, say, about the middle or last of August. Frequent light cultivations are the cheapest, because the weeds never get a chance to grow, and little hoeing is necessary. If a patch becomes foul with Thistles or other weeds it is best to mow it over, plow it up thoroughly and crop with Corn for a season. Suckers will come up among the Corn along the old rows, and the next year the plantation will be completely renewed. Stable-manure is the popular fertilizer, although, if the tillage is good, nitrogen will scarcely be needed, so that potash and phosphoric acid can be applied.

Yields and Profits.—The year after the planting the yield should pay the cost up to that time, the third year should give a large crop, and since there seems to be no limit of the profitable age of a Blackberry plantation, every good year should give a good crop thereafter. Of course, a plantation will not endure when the land becomes hard and foul or the plants full of dead and diseased wood. A crop of two hundred bushels an acre year after year is possible unless very unfavorable seasons intervene. With good varieties well cared for, the blackberry is one of the most profitable of small fruits, but the golden harvest only comes to those who work for it and think while they work.

Accidents and Diseases.—Frost occasionally injures the crop in western New York when a severe one comes late. The four most dangerous diseases are the red rust, the root gall, anthracnose and cane knot. The first is incurable, and the affected bush should be pulled out and burned as soon as discovered. The same is true of the root gall. The anthracnose is less serious, and can be kept in check by spraying with Bordeaux mixture, but the best treatment is to cut out and burn the old canes as soon as the fruit is off, and examine the bushes frequently for the disease and cut out the diseased shoots. If the patch is seriously affected it is best to mow the bushes off close to the ground in the fall and early spring, clean out the crowns, spray them and start a wholly new top. The treatment of the cane knot is deferred to another bulletin.

Blackberries deserve attention as the last of the small fruits and the luscious dessert of midsummer. They are only luscious, however, when left on the bush until fully ripe and eaten soon after they are picked. The blackberry is not ripe because it is black; it must be soft and drop into the hand when the cluster is shaken to get its full sweetness and aroma. But, since the fruit deteriorates soon after picking, blackberries never get to market in their best condition, and those who want exceptionally fine fruit must raise it in their home garden.

## Notes.

At a sale of the plants last week belonging to the late Samuel J. Tilden, at Graystone, the highest price, $120.00, was brought by a Zamia integrifolia. A Cycas revoluta, said to be two hundred years old, brought $62.00.

A large Paulownia-tree in Jersey City is now surprising all who see it by its display of flowers. Undoubtedly the long drought ripened up the wood earlier than usual and the recent rains have encouraged the flowers to open now instead of waiting until spring.

Eighty car-loads of lemons, each containing three hundred boxes, have been shipped east from the colony of Ontario, San Bernardino County, California, this year. Since the lemons have averaged $3.00 a box the growers in that region may be considered prosperous.

A comparatively small portion of the fruit raised in the Netherlands is consumed in that country. According to recent reports from our consuls, something like a million pounds of black currants, three million pounds of red currants and the same amount of gooseberries and cherries are annually sent to England.

Mr. Gerard has sent to this office flowering plants of the Algerian blue Scilla lingulata and its white variety. The small flowers cannot be called showy, although, as ten or a dozen of them are borne on a scape three or four inches high, they are bright and interesting, especially since they come later in the season than any other species of the genus.

We have recently seen bulbs of different kinds of Lilies, Hyacinths and Narcissus which were sent to a New York seedstore from the North Carolina Experiment Station. Of course, it remains to be proved that these will force as well as the bulbs imported from Europe, but in size, weight and general appearance they are altogether superior to imported bulbs.

Butternuts and black walnuts are plentiful this year and sell for eight cents a quart, while hickory nuts, of which there is also a good crop, bring ten cents. Bull nuts, the large hickory nuts known to the trade by this name, cost eight cents a quart; their meats are in demand by bakers. Chestnuts are in lighter supply than was anticipated, the scarcity being attributed to dry weather.

About the latest of the Golden-rods to flower is Solidago Drummondii, which is usually at its best during the last half of October. The flowers are of a rich deep yellow, and so abundant that the long slender stems often fall under their weight unless they are staked. It is an admirable plant for large decorations, since the flowers are well set off by the abundant dark green foliage. It thrives well in partial shade.

String beans are now coming from South Carolina and Virginia, peas from the section about Norfolk, large bright eggplants from Florida, and okra from Louisiana. The season for northern-grown Lima beans has been nearly closed by recent frosts, and the few which have escaped bring sixty cents a half-peck. During the foggy weather of the early part of the week large quantities of wild mushrooms came from neighboring meadows. They have sold for thirty-five cents a pound.

The Yellow-root, Zanthorhiza apiifolia, is one of the latest shrubs to take on its autumnal glow, but the orange and scarlet of its leaves in early November make it really desirable. In the Carolina mountains it is an undershrub, and, although neither its flowers nor fruit are conspicuous, its neat pinnate leaves and low growth make it useful for the edges of a shrubbery or for covering shaded slopes or in any other position where a low undergrowth is needed.

Professor Bailey says that natural hybrids between the common Blackberry and the Dewberry are common along the roadsides in central New York. The cultivated varieties known as Wilson's Early, Wilson Jr., Sterling Thornless and Rathbun belong to this mongrel class. The plants are characterized by a low diffuse growth, broad notched leaves and roundish oblong fruits, which are sometimes very large. Some of these hybrids have a distinct tendency to root at the tip, as Dewberries do.

California grapes are now at their best as to size and coloring, and in boxes packed with but one kind, or with bands of Flame Tokays, white Muscats and black Cornichons or Moroccos, they make a striking display. A few Salway peaches, brought out of cold storage, are yet seen. Large well-grown quinces from California, in boxes containing sixty to eighty fruits, cost $3.00. Small lots of pomegranates have recently arrived from Spain. Almeria grapes, as yet rarely seen in the fruit-stores, sell for twenty cents a pound at retail.

According to Professor Taft, winter Squashes are among the easiest vegetables to carry through the season. Trouble is often experienced in preserving them, but one reason for this is that they are left too long on the vine, where they are subjected to frost. Even if not quite ripe it is better to gather them and place them in some sunny spot where they can be covered at night. On the approach of freezing weather they should be carried to the house, and, unlike most other vegetables, they should be stored in the warmest and driest place possible. If one has a furnace and the squashes are packed around it they will keep, even if they were no more than half-grown.

H. L. Sunderbruck is considered the best yellow Chrysanthemum now in season, and the choicest blooms of this variety sell for a dollar apiece in the Broadway flower-shops. Yellow Queen is another favorite of this color now. Marion Henderson, one of the best early yellow sorts, is already past. Pink-flowering sorts have been scarce thus far, Nemesis being as good as any offered. Merry Monarch, now past, was the earliest white Chrysanthemum of the season. With this variety has been offered Mayflower, which, during the past week, was considered the best white sort of all, Mrs. Henry Robinson ranking second and J. H. Troy next in quality. The latter two varieties sold for not more than half the price commanded by Mayflower, good white flowers being in greater demand than those of any other color. The bronzy-red Sunrise and A. J. Drexel are the principal red sorts. The market season, which opened this year September 30th, was a week earlier than last year, when the first shipments were offered here October 6th.

In the basin of the lower Mississippi and in the maritime region of the southern Atlantic states the Liquidambar, or Sweet Gum, is one of the most common forest-trees of low rich lands, where it develops into tall, straight trunks, free from branches, to the height of seventy or eighty feet above the ground. The smooth and satiny wood, however, is difficult to season, and shrinks so badly in drying that the commercial demand for gum lumber has been limited. For special uses, as for example, for door panels, or for veneers in cabinet work, it is utilized to some extent, and in England the clear timber is considerably used under the name of Satin Walnut. Nevertheless, this is in a large measure a neglected wood because of its tendency to warp, which renders it unprofitable for careless dealers and consumers to handle. A recent number of *The Northwestern Lumberman* states that gum logs when quarter-sawed become tractable and reliable. The wood loses in this way its characteristic grain effects, but it still could be finished with a fine rich surface, and it could be largely employed for flooring and other plain use where durability is required. The vast amount of this timber which is still standing certainly makes it worth while to study and experiment with the wood so as to discover how it can be manufactured and dried in the most profitable way.

The last bulletin issued by the Division of Ornithology of the Department of Agriculture is a report on the economic status of the common crow, based on the examination of about one thousand stomachs. These examinations sustain the charges that are brought against the crow—namely: (1) that it pulls sprouting corn; (2) that it injures the corn in the milk; (3) that it destroys cultivated fruit, and (4) that it feeds on the eggs and young of poultry and wild birds. But when the different kinds of food have been reduced to quantitative percentages and contrasted, the injury done by the birds is comparatively slight. The great bulk of the grain consumed is waste corn, picked up here and there, and of no economical value. The destruction of cultivated fruits is also trivial, while the eggs and young of poultry and wild birds amount to only one per cent. of the food of the crow. As an offset to the bad habits of the bird he is to be credited with destroying many noxious insects and injurious animals. About twenty-six per cent. of his entire food is insects, most of them grasshoppers, May-beetles, cut-worms and other injurious kinds. The season of the May-beetles corresponds with the breeding season of the crow, and these insects are the principal food of the nestling birds. After the May-beetles disappear the crows consume great numbers of grasshoppers, and through the autumn these constitute the greater part of the insect food of the bird. The crow also destroys mice and other injurious rodents, so that in summing up the benefits and losses resulting from the food habits of the bird it seems clear that the good exceeds the bad, and that the crow is a friend, and not an enemy, of the farmer.